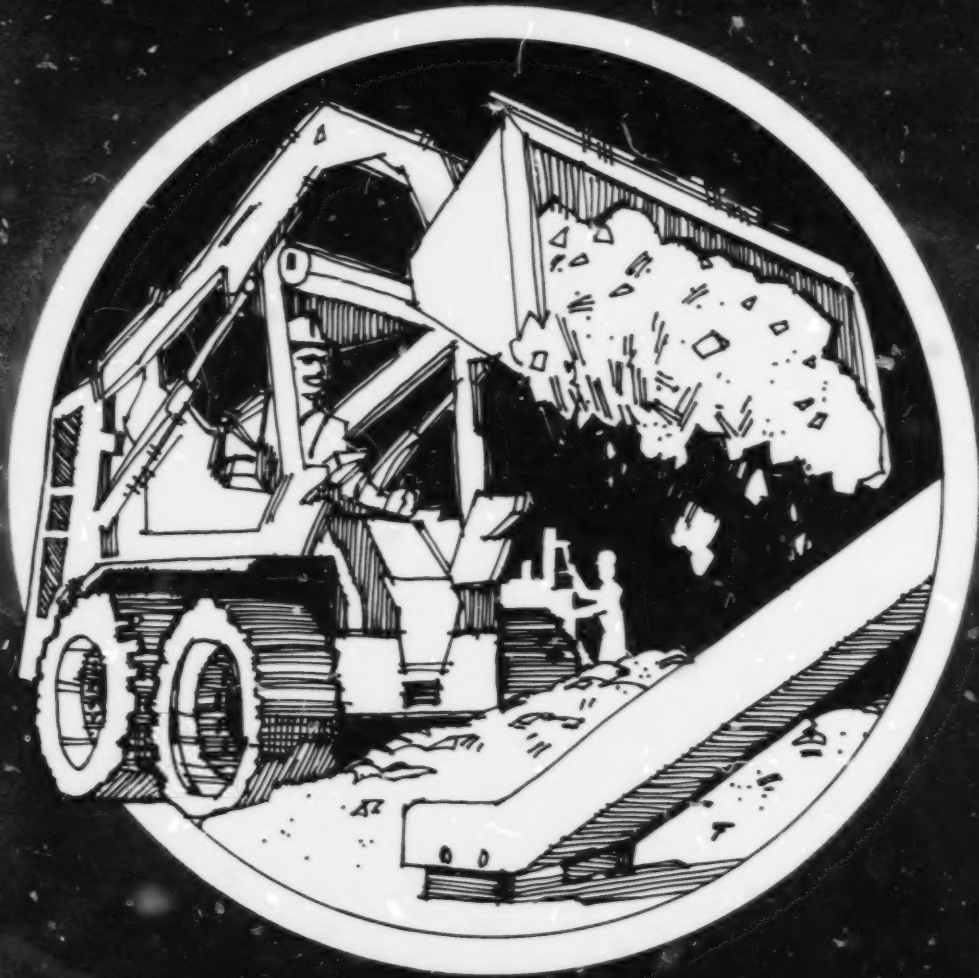


Play Space Construction



Alberta

RECREATION AND PARKS
Recreation Development Division

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WELCOME!



Welcome to the world of creating a play space! As you've taken the step of obtaining this brochure, you're probably well on your way to tackling the construction phase of your play space.

Of course, building is the 'second' step along your path. The 'first' step is planning. The success of your play space will depend on whether or not you have a solid plan in place before you build.

If you have a plan - proceed through this manual.

If you haven't yet gone through the planning process - you should obtain the first manual in this "Focus" series. It's called "Play Space Planning" and outlines all the steps you should take in bringing your vision for a play space into clear, sharp focus. By following the steps in the planning process, you'll save time, conserve resources and avoid running into serious problems now and later.

1. A Quick Refresher Course

Remember the steps described in Play Space Planning? You learned about the types of play, set goals, reviewed all the "clients" of the play space, formed a planning committee and agreed to an action plan. Once you had a program you identified priorities, outlined a budget and drafted out a timetable. You collected information on the site, looked at resources, explored fundraising ideas. Then you developed a concept, choosing from all the different kinds of play spaces available. Finally, you commissioned or undertook the actual design for the site.

Of course, most of this was just good common sense. But some information was new to you - like the four kinds of play. We'll take a closer look at applying this knowledge in the next section on design.

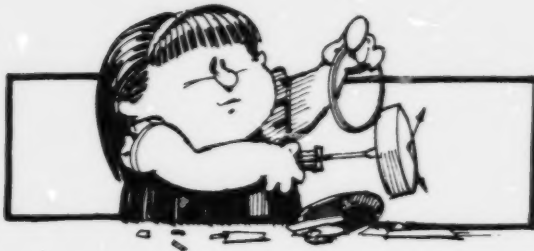
FOCUS ON DESIGN

You'll find it's well worth a little time to go over this quick "recap" of the four kinds of play. You'll see how the play space should be designed to encourage each kind of activity.

1. Creative Play - is when the child manipulates and combines materials to create something that has meaning only to him or herself. A box can become a castle or a fort, a stick a laser gun or a rocket.



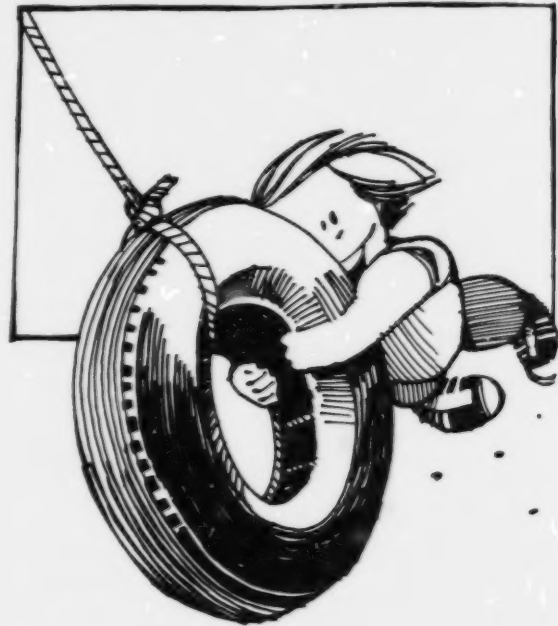
2. Quiet Play - is especially important for younger children. They need a quiet area where they can play alone, read, daydream, or enjoy arts and crafts.



3. Social Play - is important to pre-schoolers and school-age children who are learning to communicate and cooperate with others.



4. Physical Play - is and should be physically demanding, as the child learns new skills and tests abilities. It is noisy and requires enough space for running, jumping, swinging and sliding.

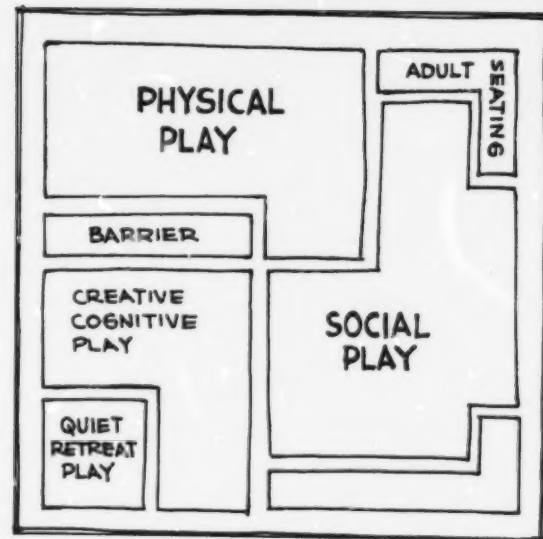
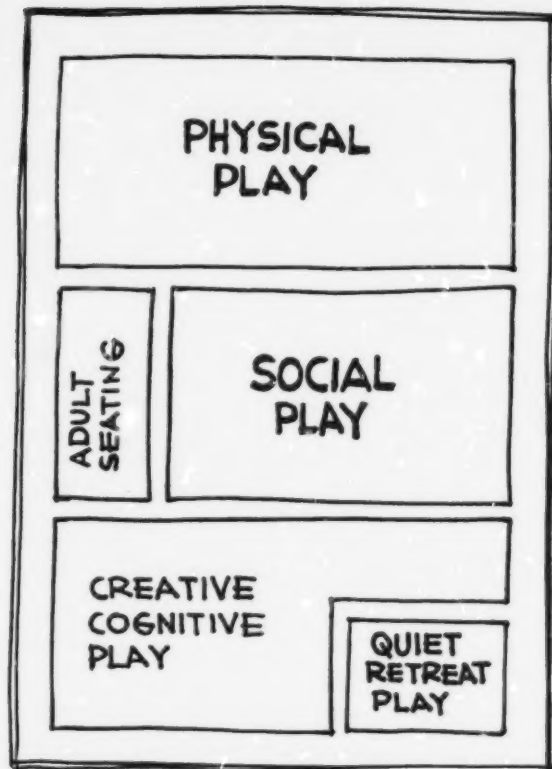


When designing the play space, you no doubt planned to group the four types of play within an area so that they enhance each other, without interfering with one another.

Physical play needs an area of its own, removed from areas designed to encourage quiet play and creative play.

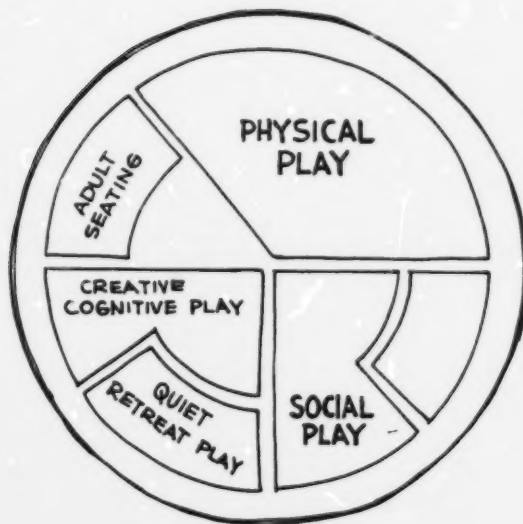
The adult seating area should provide parents with views of all the different play zones from a single vantage point.

Your plan may well resemble one of these "prototype" play space designs:



Low enclosures indicated on these designs may be replaced by higher fences, if traffic levels may cause noise or safety problems.

Landscaping throughout should feature trees, turf, low bushes and plants. These will add to the visual effect and to the "natural" feel of the play space.



PLAY EQUIPMENT: TAKE A CLOSE LOOK AT MATERIALS FIRST

You'll be eager to explore all the different kinds of play equipment now on the market, and all the designs for "build it yourself" play equipment. With a world of options, how can you evaluate equipment and make the right decision?

1. Qualities

You'll want to draft a checklist of qualities to look for. Play value is important. Does a piece of equipment offer more than one possible use, or will it restrict children to a single activity? How durable is the material? Are you willing to replace equipment in a few years, or do you want long-term value? Safety is an important factor. If you haven't already obtained a copy of "Play Space Safety", the fourth manual in the Focus series, you should do that right now. All play equipment should be vandal-resistant and easy to maintain.

Today you have a wide choice of color. Will you want to fill the

play space with bright, rainbow colors, or will warm wood tones be more appropriate in your neighborhood? You might consider mixing and matching styles. Visual variety is almost as important as the variety of play experiences the equipment offers.

2. Materials: Advantages and Drawbacks

The choice of materials is just as important as the choice of equipment. You can combine different materials in a playground design to add variety, but you should be aware of all the advantages and drawbacks. Take a moment now to review the strengths and weaknesses of each material:

MATERIAL ADVANTAGES

Wood/Logs	Good for more creative kinds of play structures; won't become as hot in summer or as cold in winter as will metal; falls and bumps against wood less painful; easier for "do it yourself" construction; available in round, square and rectangular cross-sections.
Metal	Longest-lasting; has higher strength to size ratio than wood; good for sliding equipment; usually prefabricated and easy for "amateurs" to assemble.
Plastic/ Rubber	Good for summer use; falls and bumps less painful; more creative play values; not as hot or cold to the touch as metal; will not rust or rot; available in bright colours.

DRAWBACKS

Not as durable as metal; corners and edges should be eased or chamfered; must be sanded or milled smooth to prevent splinters; parts buried or in contact with ground must be treated with preservatives; may be carved or burnt by vandals.
Becomes hot in summer and cold in winter; less creative equipment than other materials; certain metals may corrode if not coated.
Plastic becomes brittle at -30°C, so outdoor winter use in Alberta is limited; will deteriorate in sunlight; plastic and rubber will burn at trash-fire temperatures; neither is 100% slash-proof.

MATERIAL ADVANTAGES

Rubber Tires

Readily available from suppliers at no cost; provide variety of play experiences; the resilience and "give" provides high play value; may be left outside during winter; minimum maintenance.

Sand

High play value for younger children; easy to play with; good safety value; minimum maintenance required; readily available and easy to install; almost indestructible.

Water/Snow/ Ice

High play value for all age groups; sprinkler or pump good for hot summer days; snow bank or mound good for sliding and throwing; ice may be sculpted; flat ice surface good for slipping, sliding, skating.

Grass

Relatively inexpensive if seeded; moderately impact-absorbing; suitable for organized games and unstructured play activities.

DRAWBACKS

Will burn and may be slashed; unpleasant "rubber" smell on hot days; must be brush-scrubbed and still may mark children's clothing; steel belted tires lack the "give" that provides play value and steel bands may eventually poke through and cause injury.

Sand needs to be contained within curbs or low walls; must be replenished; may blow unless wind-screening provided; proper drainage and positioning required to prevent becoming too wet; foreign materials may be buried in the sand; gets onto clothing and footwear and is tracked indoors.

All pools MUST be supervised, enclosed and maintained; proper sand or gravel foundations and drainage provided to avoid mud-puddles; automatic "turn-off" mechanism recommended on pumps/sprinklers/showers to avoid waste/flooding; need hard surfaced area around water to prevent mud; if area is paved surface should be non-skid; limited to use during three- to four-months of the year.

Needs to be watered, fertilized and mowed regularly; will not survive intensive physical activity in areas under swings or at foot of slide.

MATERIAL ADVANTAGES

Earth	Loose earth has good play value which increases with addition of water; mounds provide good play experiences, visual variety, may be used to direct movement, buffer noise, views and winds and to enclose smaller spaces.
Ropes	High physical play value for climbing and swinging when hanging free or woven into nets.
Chains and Cables	Long lasting; durable, withstand high pressures.
Boulders/Rocks	Available at not cost; good creative play value, though not as high as sand and water; no maintenance required, may be painted with faces or patterns; provide visual variety.
Trees, Tree Stumps, Other Plants	May already be on site or be planted; high creative/physical play value; little maintenance required once established; living trees and shrubs provide shade, windbreaks, enclosures, and barriers; create varied spaces; provide colorful seasonal interest and contribute to attractive environment; stumps may be painted with faces or used for seating.

DRAWBACKS

Water + earth = mud! Mud is tracked into other areas and soon covers clothing, footwear and children. If area is not well-drained will soon pack down to hard surface; mounds in the wrong locations will impede drainage, cause puddles and mud; slopes will erode and become muddy if mounds not surfaced with turf or hard surface.
Low durability; polypropene and nylon ropes will deteriorate in sun; manilla will rot; can be burned or removed by vandals. If vandalism is expected to be a problem, should be avoided - if not, nylon rope is recommended.
May become hot in summer/cold in winter unless plastic-coated for comfort; frayed cable ends are sharp and should be covered with metal or plastic caps; fingers may be caught in chain loops.
Difficult to move or change; not impact-absorbing, so naturally rounded ones rather than sharp-edged ones should be selected.
Plants with thorns or poisonous parts should not be used; newly-planted trees, shrubs and plants require care and protection; older trees should be pruned to ensure climbing value and safety; coniferous trees (spruce) will prevent grass from growing around base, have low play value but good value as windbreaks during winter months.

MATERIAL ADVANTAGES

Hard Surfacing (asphalt, concrete, brick, interlocking pavers)

Durable, even surface (except for brick and some interlocking pavers); good walking surface; good surface for wheeled vehicles, baby carriages, wheeled toys, bicycles, tricycles and wheelchairs; will withstand intensive play; will drain well when properly finished; easy to maintain; suitable for certain court games and dancing.

DRAWBACKS

Can be rough and abrasive, especially when combined with scattered sand; poor impact-absorbing quality; heat absorbant. If improperly installed, may heave and crack in winter; costs more than "soft" surfacing; if used to excess gives play space a bleak, harsh appearance.

Bolts and other fasteners and connectors should not be removable without tools. Provision should be made to prevent them working loose. With the exception of carriage bolt heads, fasteners should be countersunk or smoothly capped. Steel parts should be corrosion resistant, either through galvanizing, chrome, aluminum or plastic coating.

Mechanical components and moving parts have high play value, but create maintenance problems. Moving parts such as swivels on tire swings will last longer if they are lubricated regularly.

PLAY EQUIPMENT: PUTTING IT ALL TOGETHER

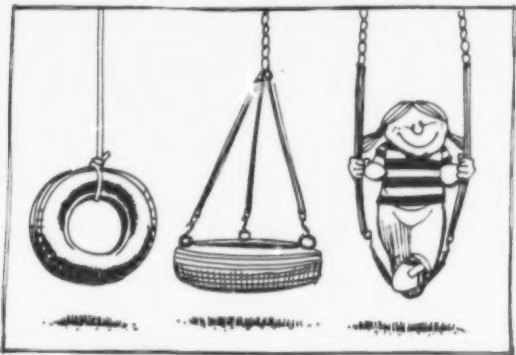
Here you have an exciting range of options, including developing a "theme" play space. Why confine your plans to what's been done before? With a little extra planning, you could develop a play space on a nautical theme, a frontier theme, a pre-historic theme or even an outer space theme. All it takes to convert equipment into "theme pieces" which

will be part of the new concept are some minor modifications and a little imagination. Of course, before you decide on a theme park, you'll want to approach members of your community to be sure they approve. Residents of an older, established neighborhood might not be pleased to see a "Fraggle Rock" park appear!

Whatever you decide to do, be sure you create a complex structure. Play equipment should be complex and multi-functional. This will allow a wide variety of play experiences and a good circuit of movement. It should also give children the freedom to create their own "plots and scripts" in their creative fantasy play.

Play equipment may stand alone, or be combined into a complex structure, as long as guidelines for safety are met and play-use patterns are considered. Before you make hard and fast decisions about what kind of equipment your play space will feature, do a little more research! Obtain as many brochures as possible from play equipment manufacturers. Even if you intend to build your own equipment, you'll find brochures are good sources of ideas. They will give you a good idea of how many children can play at one time on each piece of equipment.

EQUIPMENT OPTIONS



1. Swings

Swings provide excellent play value and children of all ages love them!

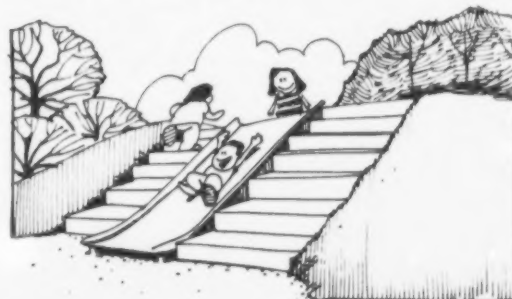
- To prevent collisions, swings should be located away from circulation areas and paths, and may even be isolated from other areas by hedges, mounds or fences.
- The zone in front of the swing should be clear of fixed structures. It should have adequate clearance between side-by-side seats and the support frame to prevent side-sway bumping.
- Seats should be made of soft material to reduce the hazard of children being hit by "flying swings".
- Surfaces under swings should be soft and well-drained.
- Plastic-wrapped cables and rubber-hose-covered chains make good swing support materials. They are stiff enough not to be wrapped around the top support bar, flexible enough to provide good movement, and provide a safer hand grip.
- One of the best kinds of swing is also the simplest to construct. A heavy rope with knots tied in it is ideal, as it can be used for climbing as well as swinging.
- However, never place a single-point swing side-by-side with any other kind of swing.

The danger of accidents is too high.

2. Slides

Another traditional play favorite, the slide has seen some positive changes over past years. Slides built into hillsides or mounds prevent dangerous falls from the platform or over the sides. They are more easily used by disabled children. Slides may also be incorporated within larger, complex climbing structures.

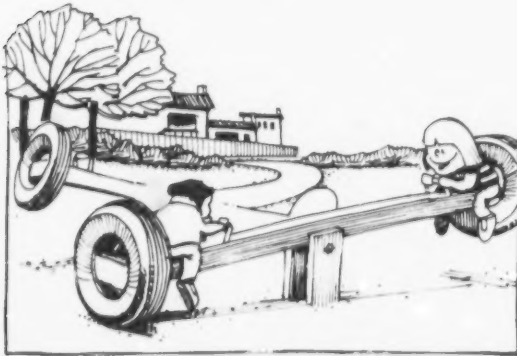
- Short slides should be as wide as possible to provide greater opportunities for play.
- Longer slides should be narrow for greater control of movement and safety.
- Slides should be steep and long enough to provide a challenge. A slope of 2:1 is sufficient; even better is a slope of 2:1, with a 1:1 section to increase speed. All slides should provide a slowing strip at the end of the run.



- With all the activity around a "hillside slide", grass will soon disappear. The surrounding area should be stabilized with material such as railroad tie steps or telephone poles cut into sections and placed on end to act as steps.
- A slide which is curved or circular, or has variable grades such as "waves" has greater play value than a straight slide.

- Metal slides should be oriented to the north or northeast, to avoid becoming too hot during summer afternoons.
- Landing areas should be made of soft, dry materials and be kept free of fixed objects.
- Side-screening should be on all slides to prevent children from tumbling off.
- The sides of slides should be blunt, rather than sharply pointed, to prevent injuries.
- Wood is not recommended for the sliding surface, as it can splinter as it ages. The sliding surface must be free of sharp edges or protrusions.

3. Teeter-totters

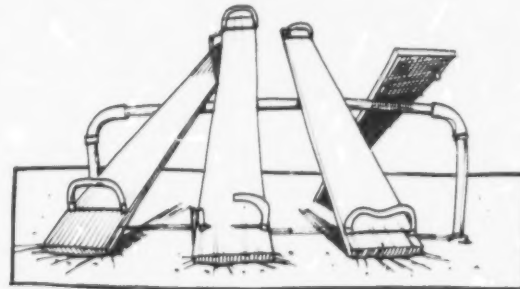


While once a regular fixture of every play space, the teeter-totter has faded somewhat in popularity as it offers a one-dimensional play experience. Teeter-totters, and other equipment whose primary function is to permit bouncing up and down, often stand idle in play spaces where more interesting play equipment is available. However, if you decide to include a teeter-totter, the safety may be improved through some careful additions.

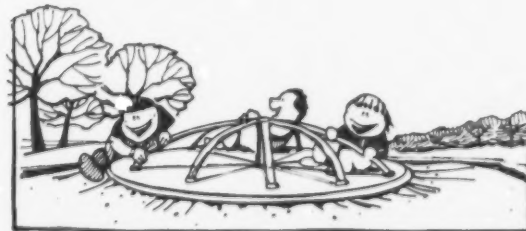
- A bumper such as sand, a piece of tire or a rubber mat should be installed at landing areas.
- Teeter-totters should not be

installed too close together, as children may collide if the boards sway from side-to-side.

- The size of the teeter-totter should be appropriate for the ages of children who will be playing on the equipment.
- A tire, mounted perpendicularly to the end of the board, will provide a back rest and protection from jolts, as the tire absorbs and cushions the shock of landing.
- Each seat should have a secure hand grip, padded to prevent head injuries.



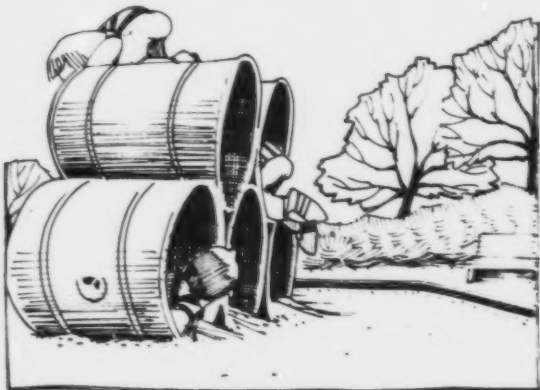
4. Merry-go-rounds



Merry-go-rounds have limited play value and some older styles are hazardous. However, should your group wish to incorporate a merry-go-round in your play space, you can decrease the dangers through careful selection, proper installation, regular maintenance, and:

- Built-in speed controllers.
- A non-skid surface on a solid platform. (Platforms with spaces large enough for a child to step through are dangerous.)
- Supervision.
- No protruding bolts.
- Platform far enough above the ground so that feet cannot be trapped beneath, yet close enough to ground that child cannot be caught.
- No exposed moving parts at the spindle/axle connection, as these can amputate fingers.
- A sturdy safety railing and restraining bars so the children don't spin off.
- A soft surface such as turf around the merry-go-round is preferable to concrete, as a hard surface will increase injuries to a child who does fall from the structure.
- Platform should be round, as sharp corners are hazardous to children standing near the moving merry-go-round.

5. Tunnels, Drums, Barrels and Cable Spools

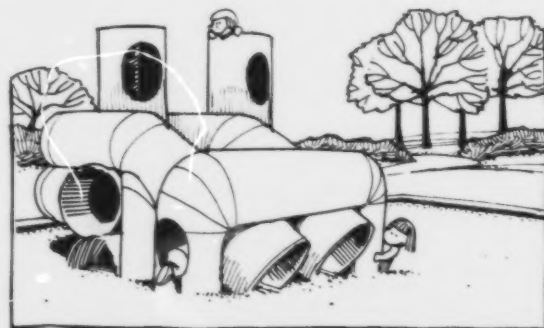


While tunnels are relatively new additions to the play space, they're old news to children. Few storm sewerage lines have been

installed without neighborhood children first discovering the magic to be found within the three to four-foot lengths of pipe!

Cement pipes are just one of your options. Tunnels (which don't necessarily need to be buried) may also be made of wood, plastic, or metal.

- Wooden barrels and 50 gallon drums make ideal tunnels.
- For comfort in crawling and to protect knees, a shallow layer of sand may be placed on the base.
- Sharp, jagged edges must be sanded or planed smooth.
- Barrels may be mounted in frames, or simply left loose in the play space.
- Small barrels may also be used with other loose parts in children's construction projects, or may be incorporated within larger climbing structures.



- Cable spools, which can be anywhere from 2 feet to 12 feet in diameter, offer tremendous diversity in use. Larger spools may be bolted together to form play structures, smaller spools may be used with other "loose parts" such as

boards, barrels and boxes for children to use in making their own constructions.

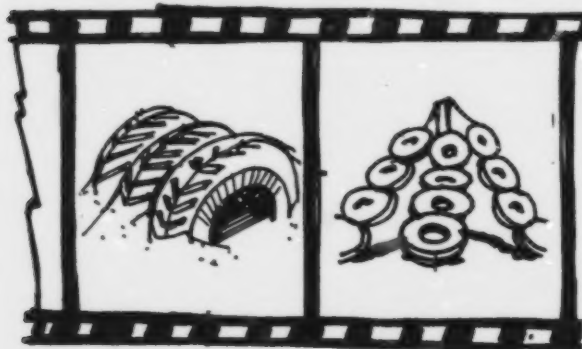
- Two large spools, bolted together and enclosed with 2 x 4's form a delightful play fort.



- Cable spools of varying heights may be used as stepping stairs, or connected together to form an obstacle course.

6. Climbing Structures

While it shouldn't be the only element within your play space, the climbing structure may well be your "major attraction". A self-contained play environment, this structure is usually composed of a series of overlapping and connecting wooden platforms - multi-decks - of different heights, shapes and dimensions. Apparatus

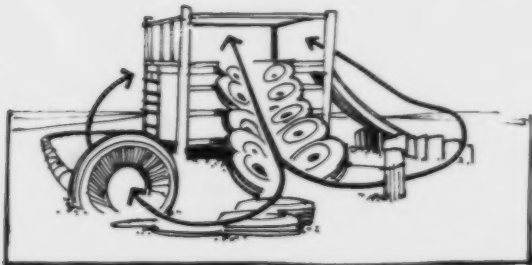


for swinging, sliding, climbing and balancing are suspended or attached to the platforms of the structure. In constructing the multi-decked structure, you have a virtually limitless range of options to choose from.

Don't make the mistake of relying only on the multi-purpose structure! While it appears to combine all four play activities, actual use shows it can't. "Climbers" are more suited to physical or social play, and these activities are simply not compatible with quiet play or creative play. A decision to simplify construction and save money can detract from the use and value of the play space.

Some general guidelines:

- The climbing structure should be designed to offer a number of ways to move and explore. Every level should have optional ways of climbing up and down. Children should be able to climb, jump, slide or swing from every level.
- It should offer a number of ways to enter or exit. Slides, nets, ladders, tunnels and beams should lead to and from the multi-decks.
- It should offer shade and shelter, and provide the opportunity to play hide-and-seek.



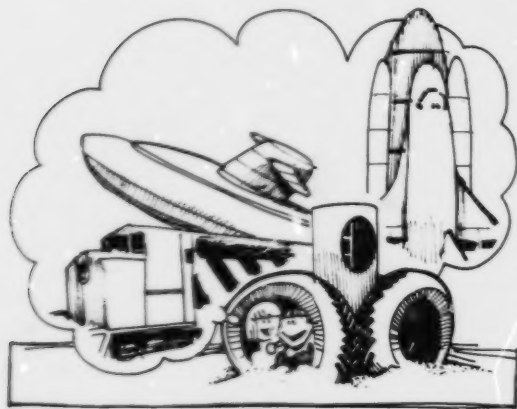
- The scale of the climbing structure must fit the child's abilities, and be high enough to offer a challenge without posing a safety hazard.
- The first level of any high climbing structure should be inaccessible for very young children.
- Surfaces underneath the structure should be soft enough to cushion falls. Sand, pea gravel or wood chips are recommended.
- Balancing cables, which are becoming increasingly popular, should be coated with a rubberized casing to be safe in winter as well as in summer.
- All wood should be pressure-treated or coated with a non-toxic paint or wood preservative. Creosote may be used for below-grade wood surfaces, but as it can burn skin or damage clothing, never use it on play-level wood.
- Railings, ladders, decking and supporting members should be securely fastened. Nuts and bolts are preferable to nails. Bolts should be countersunk and holes plugged.
- Exposed ends of tubing and pipes should be covered with locked caps or plugs with a smooth finish.
- Support posts should be set into the ground for at least 20% of total length, to a minimum depth of 60 cm (24"). Free-standing posts (those used for tire nets, for example) should have at least 30% of their length, 90 cm (36") set into the ground.
- For the greatest stability, concrete should be used as backfill material around anchor posts.
- The top of the concrete footing should be tapered to drain away from the post, and should be

buried beneath packed earth to prevent accidental exposure if sand is displaced.

7. Play Structures

To combine social and physical play, these structures may be designed as elements within climbing structures. They may be built on ground level, or above ground level in trees or in climbing structures such as treehouses. They may also be designed to stand alone within the context of the "social play" area.

Fantasy and Theme Structures



Children are masters at finding new and original uses for spaces and equipment never dreamed of by the designer! This is particularly true of play structures planned to encourage social and dramatic play. Providing the environment where this creativity can flourish is somewhat of a challenge. Play

structures which have obvious "themes" and limited functions may hinder the child's imagination. Those which are too abstract or ambiguous may not stimulate the child to create new themes for familiar, ordinary objects. The idea is to provide an unstructured object which can become a space station, store, a theatre stage, a fort, a castle or a cabin. This kind of play structure should be relatively simple in design, giving children the freedom to use their imagination.

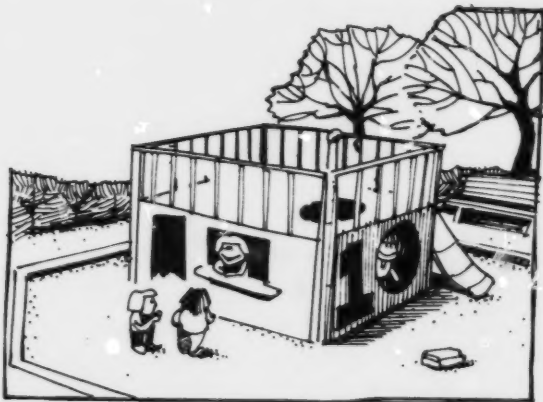
Playhouses, Treehouses and Forts



- Stimulate social play among children six to 10 years of age.
- Playhouses for this group should be small enough to be cozy, but big enough for four children to play together, at least 180 cm x 180 cm (6' x 6').

- An open log structure permits some adult supervision while providing children with privacy.
- Playhouses, forts and other play structures should have floors to prevent the interiors from becoming damp.
- The door sill should be raised at least 100 mm (4") from the ground, so the door may be opened even during winter when the snow has drifted.
- The walls may be climbable and the roof may become a deck for additional play use. However, a playhouse with a stair should not incorporate any other climbing equipment, as it will become a physical play area. This will conflict with the social play below.
- The addition of a bench or table will stimulate social play. Even better is the provision of loose materials - children will create their own "props and settings" when boards and blocks are available.

The Storefront Play Area



- The "storefront" concept is a simple yet effective way to enhance social and dramatic

play within play structures.

- A separate area may be constructed, or a playhouse or fort may be designed to include a "window/counter" area where children can act out imaginary situations such as shopping, enacting puppet shows, or staging stories and plays.
- The roof provides privacy, giving a fort-like effect as well as providing shade and another elevated climbing area.

Four Steps to Proper Installation

If you've decided to use manufactured equipment, be sure to follow the manufacturer's recommendations to the letter! Read and follow instructions on space required, foundations, preparation and assembly of components and erection. Do not substitute parts or change procedures, as you may invalidate the warranty.

In addition to specific guidelines, follow these four guidelines to ensure proper equipment installation:

1. Foundations

- Foundations and footings for equipment should be installed in accordance with manufacturer's recommendations and the site conditions. If you encounter unusual site or soil conditions, consult the manufacturer, a professional engineer or a landscape architect.
- Concrete footings/foundations should not be installed in frozen or wet soil.
- Foundations should be set below the normal frost line for your area.
- The foundations should be at

least 20 cm (8") below grade to prevent the potential for injury through exposure.

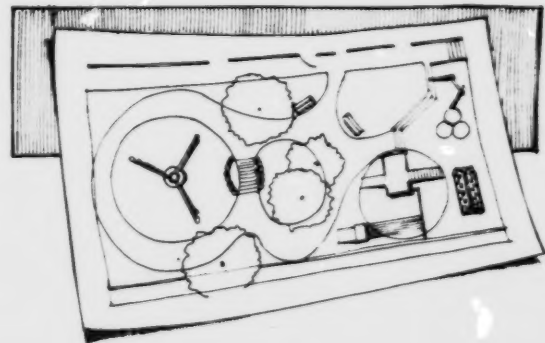
- Concrete footings should have tapered top to shed water.
 - Accelerators based on calcium chloride should not be used.
 - Concrete should be completely hardened before equipment may be used (minimum 48 hours).
2. Preparing the Components
- Check all components for damage. Be sure there are no flaws in the protective coating or finish. Repair damaged coatings and replace damaged parts.
 - Clean contaminants from all surfaces. This will prevent timber from decaying and metal from corroding.
3. Support Protection
- Seal the joints between supports and concrete with a non-hardening mastic material (sealer).
 - Retard corrosion of aluminium and aluminium alloys by painting all areas that are in contact with and immediately above the play space surface.
 - Where supports are bolted to foundations, use a non-shrink grout or seat the base plates on a neoprene pad.
4. Erection
- Follow the manufacturer's instructions!
 - Don't substitute materials or procedures.
 - During installation, install the protective surface required.
 - Provide the space specified by the manufacturer for each piece of equipment.
 - Check all joints and connections for rigidity, and to ensure they are tamper-proof.

PLAY AREAS: ADDING DIVERSITY

1. Play Equipment Area

In providing children with a physical play area, take care to arrange equipment to patterns that encourage activity to flow from one area to another.

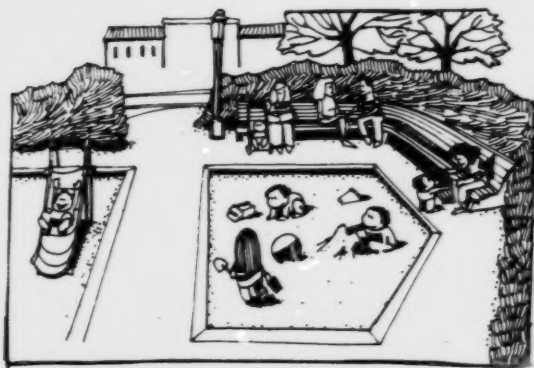
- To prevent collisions among children using adjacent pieces of physical play equipment, carefully-planned space should surround each piece of equipment.
- Impact sand should be installed under and around all physical play equipment and adequate clearance provided between equipment and sand area edges.
- The play equipment area should be separated from quiet and creative play areas by space, mounds, plantings, or an appropriate combination of all three elements.
- Mounds, plantings, fencing or other enclosures should also be planned to prevent children from running onto nearby streets.
- If the area is fenced, openings should be provided to permit access from adjacent streets.



2. Tot Area

Toddlers and pre-school age children need their own "space" where equipment and components are scaled down to their own size. The sand play area (see "3. Sand Play Area", following) is an essential component of the tot area.

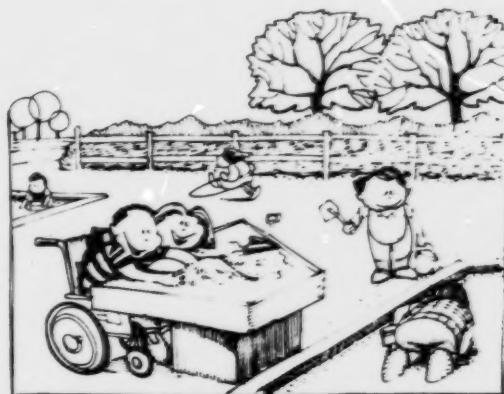
- Scaled-down equipment prevents intrusion by older, more aggressive children.
- The tot area should have a close link with or be next to the hard-surfaced area, where toddlers can ride tricycles and bounce balls, and adults can push strollers.
- The area's base, however, should be sand or pea gravel.
- Sand play areas should be open to the morning sun so that sand will dry quickly in the early morning hours, but should be at least partially shaded in the afternoons.
- The adult seating area should provide a clear view of the tot area.



3. Sand Play Area

Sand serves two valuable purposes in the play space. First, impact sand is essential in the play equipment area, and should be installed under and around climbing

structures, slides and swings. Second is its value for creative play. Because sand holds almost endless fascination for younger children a sand box or a sand play area is an essential part of every play space. It has the highest play value when combined with water, so sand play areas should be located in close proximity to water sources.



- Sand play areas will hold more children and provide more varied activities than a smaller, restricted sand "box".
- Play value is enhanced with the addition of small play structures such as sand chutes and flat play tables.



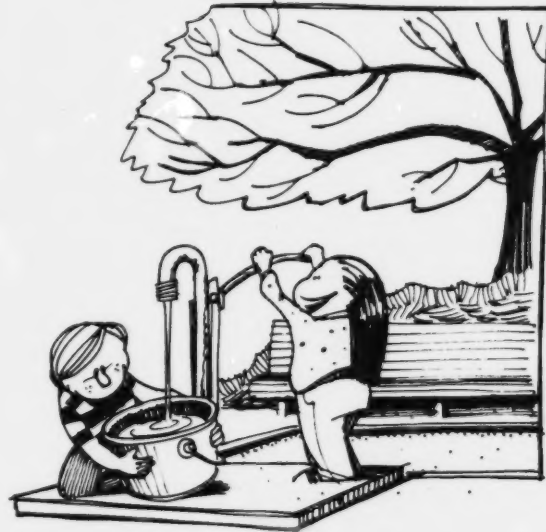
- An elevated sand play table will provide a creative play area which is accessible for children in wheelchairs. The surface below the table should be hard, so the wheelchair may be easily moved around the table. A pulley system incorporating a tire and chain may be incorporated within the unit to provide added play value for all children.
 - To prevent weed growth in the sand play area, treat the underlying soil with a sterilant.
 - The sand play area should be located in the sun for warmth, and to dry excessively wet sand. (The sun's rays also help to disinfect sand.)
 - Shade should be provided in a nearby area by trees, an overhead trellis or small shelters.
 - Wind screens should be provided, or the surrounding area landscaped, to prevent the problem of blowing sand.
 - Select the proper type of sand:
- As grass will not survive long in the area immediately surrounding the sand play area, solid materials such as brick, stone, asphalt or concrete are recommended.
 - In an area where poor drainage presents a problem, provide subsurface drainage tiles. Where possible, connect the drainage tiles to a storm drainage system.
 - The depth of sand may vary from a minimum of 30 cm to a maximum of 45 cm (12" to 18").
 - Consider placing a raised platform enclosed by a low curb next to a portion of the sand play area, to make it easier for children in wheelchairs to reach it.

4. Water Play Area

For sand play area - you will require clean-washed sand with a balanced mixture of coarse to very fine particles, 1 mm to 5 mm (1/32" to 3/16"). This sand, which is closest to beach sand, packs well when moist.

For impact sand - select sand which has rounded particles of uniform size, 1.5 mm to 0.25 mm (1/16" to 3/32"). This sand, which is similar to dune sand, will not pack as easily and will not scrape children's skin.

- To prevent sand from spreading to other areas, it must be contained with low walls or curbs. The walls may be used as benches to sit on, if they are high enough.



Water has infinite play possibilities! Even though our climate means its use is restricted to three or four months of the year, having a water feature area will see your play space in demand even on the hottest summer days

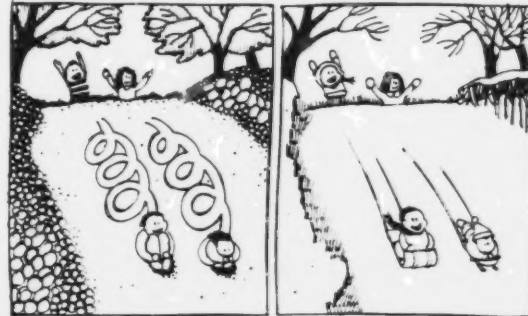
when other areas are empty of children.

You don't need to think in terms of a pool or lake, which would require supervision, maintenance and safety restrictions. Equally valuable for play purposes are pumps, faucets, sprinklers or showers. These are also easier to build, easier to control and less expensive.

- A hand pump makes the child work for what he or she gets, which adds challenge and increases appreciation!
- A simple garden spray nozzle allows children to touch and manipulate the water source.
- Spray jets which have "limited time" sprays are now available, and prevent flooding or over-use by children who wander away.
- Water sources should be located close to sand play areas, as the two add to each other's play value.
- The area around a water source should have a hard surface that will not become muddy. Materials recommended include wood, stone, asphalt or concrete. These should be designed to provide a non-skid surface when wet.
- A simple design for containing small amounts of standing water is a dish-shaped, impervious surface such as asphalt, clay with boulders or concrete. A drain at the lowest point maintains the water level at a safe depth.
- A play stream, which may be a natural or man-made element, is also valuable as it provides a source of moving water for floating objects. The flow within an artificial stream may be controlled with an inlet and drain.

5. Mounds/Amphitheatres

In Alberta, where land is predominantly flat, a change in elevation provides a special feature area for the play space. If your site features a hill, level it only to the point where maintenance isn't a challenge. If your site is flat, you may wish to construct mounds with material from excavations.



- Ensure that slopes do not end in the parking lots or against vertical surfaces; keep the sliding areas free of equipment.
- A number of interconnected mounds are preferable to one large hill, as a small group of aggressive children may dominate one hill.
- To add play value, you may combine tunnels and slides with mounds, and build in log steps.
- Grass is suitable for all-purpose surfaces, but for highwear areas and paths a hard surface will be more durable and practical.
- Mounds and hills located in a position to block prevailing winter winds provide all-season wind protection.
- By grouping mounds, an interior space will be created which offers shelter from the wind

and an "informal amphitheatre" for creative/social play and group activities.

- Slopes should be steep enough to offer play value for rolling and sledding, but not so steep as to pose maintenance problems. As a general rule, a slope ratio of 33% will permit maintenance staff to mow grass without difficulty. The 33% ratio simply means that for every one unit of vertical rise, you should allow three units of horizontal run.
- If you wish to discourage tobogganing, decrease the slope ratio! Build mounds with only one unit of vertical rise for every ten units of horizontal run.



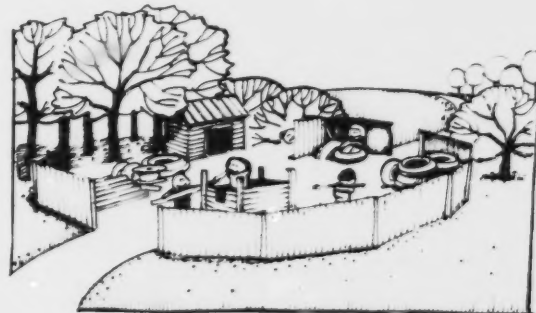
6. Adventure Area

While this area provides children with the adventure of "learning by doing" in undertaking construction projects, noise and visual disorder pose special construction concerns.

- The area should be fenced and lockable for security purposes - both to prevent theft and vandalism and to prevent children from working on projects without the supervision of an adult.
- Adult supervision is essential.
- The fence, when combined with mounds and plantings, provides

a security barrier which is also visually pleasing.

- A natural environment incorporating trees, streams and hills is ideal. If these natural elements don't exist on your site, they can be created through landscaping.
- The gate to the area should be wide enough for trucks carrying supplies to enter.
- A lockable shed for tools, valuable materials, a fire extinguisher and first aid kit should be located within the fenced adventure area.
- A telephone, with emergency numbers clearly posted, should be located outside the locked area.
- An office for the play leader, while an option, is strongly recommended. The building may serve other functions as a playroom during inclement weather and for washrooms.
- An area for scrap materials should be provided.
- Total area should be at least 1,000 m² (1/4 acre) although a larger area would be preferable.



7. Quiet Retreat

Less space is required for retreat area, as fewer children will use it at one time, and quiet play is usually passive.

- The area should be given a feeling of seclusion and privacy, through location away from noisy areas, through planting, or by providing visual barriers such as boulders, rocks or tree stumps.
- The retreat area should be located next to landscaped areas or the adult seating area.
- To encourage quiet play, a bench, table, hollow log or length of pipe should be provided.



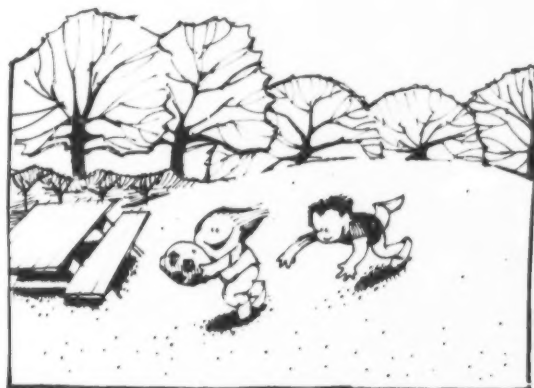
8. Open Green Space

As a wide range of physical activities - running, jumping and rolling - will take place in this area, it should be kept free of plantings, except around the boundaries.

- Hardy, well-drained turf provides an excellent surface.
- Trees and shrubs planted around the area define the space and prevent children from dashing into other, quieter play space areas.
- Hardware for removable poles for net games and posts for ball games may be countersunk below the grass surface. When required, nets and posts may be

erected with ease.

- The dimensions of fields should accommodate the level of play needed for the activity. Soccer goal posts should be at least 10 m (30') from fences. Baseball backstops should be at least 15 m (45') from fences.
- Hinged metal plates covering the net and post attachments will prevent dirt from clogging the below-surface parts.
- While drainage slopes may range from .2% to .5%, the ideal slopes are between 1% to 1.5%.

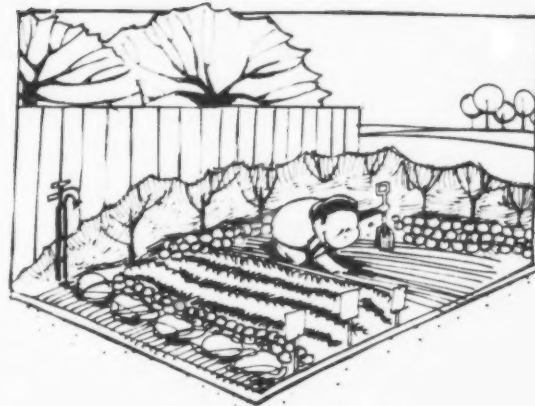


9. Natural Area

It takes work to achieve the "natural look"! The area which is preserved to provide children with the opportunity to experience an untouched environment will need to be kept clean and accessible.

- Paths which are already in existence may be enhanced by removing deadfall, pruning back trees, and cutting back underbrush.
- New paths may be created by removing obstacles, cutting underbrush, pruning or removing trees.
- Low-hanging branches over paths should be removed to provide safe trails for hiking, jogging

- or cross-country skiing.
- Unhealthy trees should be selectively removed throughout the area.
- Certain plants - poison ivy, stinging nettles and dangerously thorny bushes - should be cleared out.
- Ponds should be cleared of debris and unwanted plant life.
- Where possible, plants and wild flowers native to the area should be re-planted.
- With adult supervision, cages may be built in a secured area and small animals kept and cared for by children.
- If the natural space contains a marshy area, it may be drained - or preserved as an area for nature study.
- Streams add play value, so efforts should be made to preserve them, make them accessible, and make them safe. If banks are steep or muddy, you may mould the ground to create lower stable banks, add stones, gabion baskets or concrete retaining walls.
- Children should be involved in the less strenuous tasks such as clearing light materials from paths. This involvement will increase their responsibility for keeping it clean.
- The natural area may be enhanced with tree houses, simple physical play equipment such as ropes or climbing frames, or family recreational items such as picnic tables and barbecue grills. Here, however, it is important not to overcrowd a small, natural area. If space is limited, eliminate the enhancements and preserve the natural areas.



10. Garden Area

While small children need constant adult encouragement to enjoy gardening, the activity of planting and caring for plants is a valuable and enriching play experience.

- Vegetables such as lettuce, beans, peas and radishes and bulbs or hardy annual flowers are easy to grow and show rapid results.
- Plots should not be wider than 600 mm (2') to prevent children from trampling plants.
- Flat, smooth stones may be placed in beds as paths.
- The garden plot should be located in a sunny area, close to water supply.
- Low fencing around the area is required if it is close to an active play area.

11. Paved Area

While over-using concrete or other paving materials can create a hot, bleak environment, the paved area is essential for many activities.

These include dancing, playing certain ball games, skateboarding, bicycling, tricycling. The paved area is also important for people in wheelchairs.

- Asphalt, shale, concrete or interlocking pavers are recommended for the paved area.
- If games which require a hard surface for bouncing balls (basketballs) are not planned, the surface may also be turf as long as the land is flat and the turf is well-maintained.
- Total area may range from 230 m² to 744 m² (2,500 to 8,000 square feet), depending on the games which are planned.
- Before building games courts, you may wish to do further research into design and construction specifications. (Just one valuable reference source is the manual on Tennis Courts and Outdoor Rinks, sixth in this Focus Series on recreation facilities.)
- For general guidance, the space required for formal games courts is:

Basketball:

- Regulation Play -
29 m x 15 m (94' x 50')
- Non-Regulation Play -
18 m x 12 m (60' x 40')

Volleyball:

- Regulation Play -
18 m x 9 m (60' x 30')

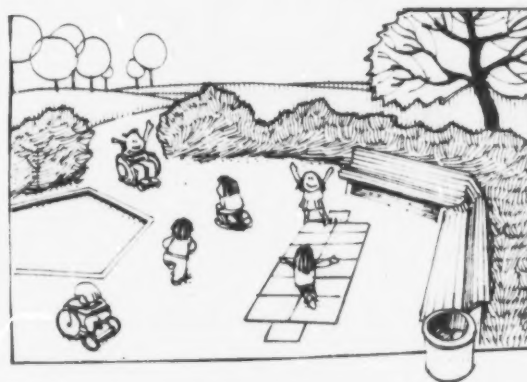
Tennis:

- Regulation Play -
24 m x 11 m (78' x 36')
(not including run-back space)

Rinks:

- 61 m x 26 m (200' x 85')

- Free-skating areas may be created on the hard-surfaced area by developing a series of small ice areas. These may be separated by low mounds or islands to prevent hockey from being played.



12. Service Building

The service building (or equipment shed) may be built into a climbing structure, attached to a fence or to a building. It should be lockable.

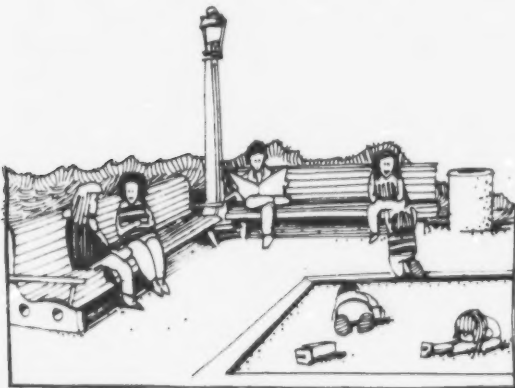


- The building should provide easy access for service vehicles, and provide convenient access to utilities.
- The size is optional, but the building should be large enough for the daily storage of maintenance tools, tools and loose materials used in construction play, and winter storage of summer play equipment such as swing seats.

- The service building should have a floor to prevent the interior from becoming damp, and the door sill should be high enough to allow easy access in winter, even after snow has drifted.

AFTERTHOUGHTS... TO THINK OF FIRST

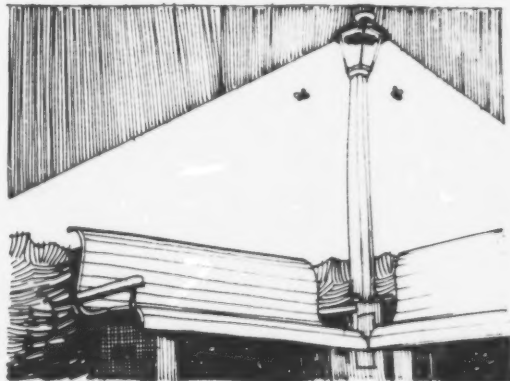
While evaluating play equipment, don't neglect practical considerations for the area that will affect your enjoyment of the play space!



Adult Seating - should feature comfortable benches with backs, a shaded area with a good view of the play space, even tables. Arrange the benches to encourage adult socializing, too!



Litter Bins - are essential! Permanently mounted containers will prevent theft ... a variety of different materials are available to complement your overall design or theme.



Lights - while not essential during the summer given Alberta's long daylight hours, should be provided if you have planned your play space for all-season use.

Bicycle Racks - should be provided to discourage children from leaving bikes and trikes right in the middle of play areas.



Drinking Fountain - is not essential, but should be provided if your play space will attract a number of children during hot weather. The fountain should allow for draining of water lines in the fall.



Signs - should include "playground" traffic signs on adjoining streets as well as informational signs posted within the site. These might include rules for play, information on hours, days or months of operation, and whether or not supervision is provided.

Posting a telephone number where parents or users may report damage or problems is a good idea. Commemorative plaques acknowledging donations, volunteers or other contributions may be featured on benches or play structures.



TO BUILD...OR NOT TO BUILD?

Once you have formalized your plan and made your equipment choices, you can cost out the materials and the labour. As with any other major undertaking, you should obtain several written quotations from reliable suppliers. Once

these are in hand, you can make a final decision on whether to contract out all the work, undertake it yourselves, or divide the project between contractors and team members.



SAMPLE BUDGET

As a guideline only, these costs reflect general figures to include in your budget. Actual costs will depend on what you've planned and current rates for materials in your area of the province. Costs are for materials installed by volunteers only; contractors' costs for labour would be over and above these figures:

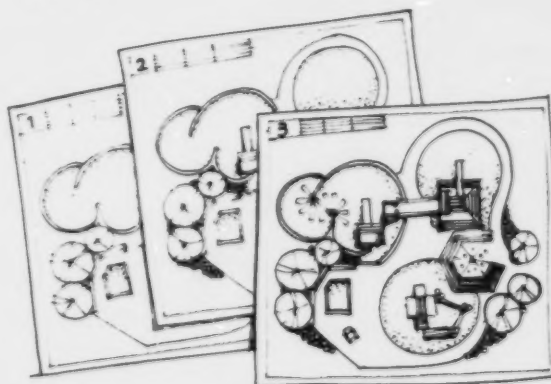
Preparation of site	\$ 120
Fence to enclose area	\$ 280
Entrance path and patio	\$ 200
Three benches (\$260 each)	\$ 780
Litter bin	\$ 180
Sand pit with drainage base	\$1,500
Hand pump, drains, plumbing	\$ 500
Climbing frame with slide	\$1,500
Play equipment shed	\$ 230
Rocks and misc. material	\$ 40
Seed grass area 65 m ² (700 square feet)	\$ 180
Nine trees (\$112 each)	\$1,010
50 shrubs (\$5.50 each)	\$ 275
10% contingency	\$ 680
TOTAL	\$7,475

Amounts updated from: Canadian Mortgage and Housing Corporation. Play Spaces for Pre-Schoolers Advisory Document, 1980.

To a large extent, your "buy or build" decision will rest on what skills and resources you have within your own team. If you have experienced contractors and carpenters, you can reduce your costs by undertaking most of the work yourselves. If not, you should get professional help for most of the work, except for "finishing touches" of simple assembly, painting and sanding. Playground designers and most manufacturers will assist you in the design and installation of play equipment. Play equipment manufacturers will also supply and install equipment, or will supply kits with instructions for assembly.

Another major factor in your decision-making process is the amount of money you have raised. If you find that your goals exceed your budget, there are two options to consider.

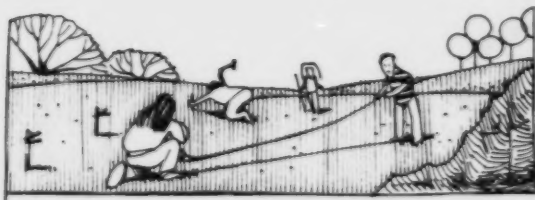
The first is to undertake further fundraising activities, to raise enough money to cover all the costs. The second is to undertake the play space construction in phases, scheduled over the next few years.



The second alternative is often the most practical. Indeed, there is a definite advantage to phasing the addition of play equipment and the construction of feature areas over a period of time. As children in the community grow older, their play needs change. More challenging equipment and play areas may be added as the neighborhood children grow up.

CONSTRUCTION: WORKING FROM THE GROUND UP!

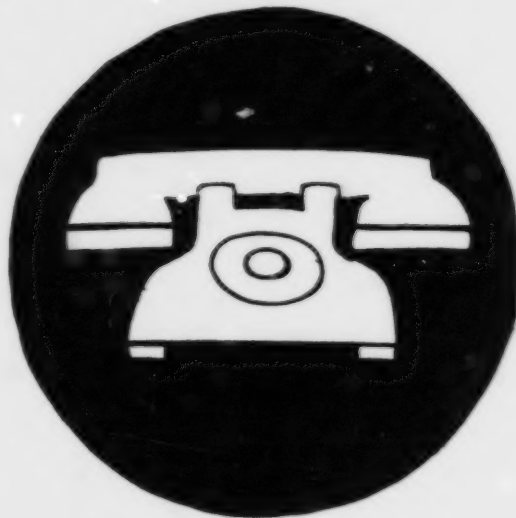
Once you have made firm decisions on what play equipment you will be able to purchase, and what areas you will be able to construct, you can approach the construction challenge. In most cases, outside contractors are retained to do the heavy groundwork before neighborhood volunteers begin to erect equipment. However, you will be responsible for some of the preliminary construction steps.



Step One: Stake the Site

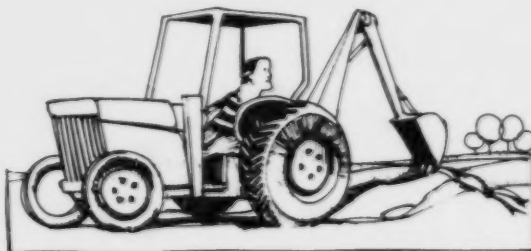
Use survey stakes and tape, or chalk lines if the surface is hard-packed. Mark out each specific area within the play space site, such as location of posts, edges of sand box, and paved

areas. Flag and protect existing trees and shrubs you want to save. Don't mark the site too far in advance of construction, as stakes and tape may disappear and chalk lines may be washed away by rains.



Step Two: Dial Before You Dig

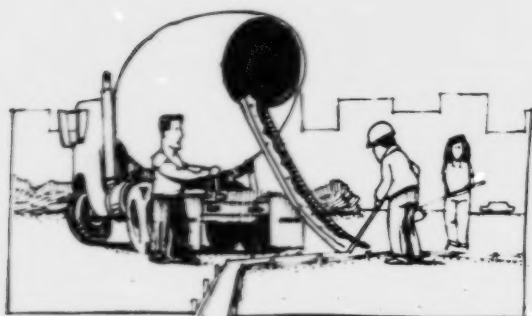
Telephone and utility lines may be located just below the surface, even in what appears to be an empty field. Call the "Dial Before You Dig" number to have utility lines staked out before turning the ground.



Step Three: Excavating, Grading and Drainage

Heavy equipment work comes next.

The crew tackles the major tasks of digging holes for footings, digging a pit for the sand play area, excavating for the paved areas and water play feature area, rough-grading the mounds and shaping the general site area to provide good drainage. At this stage, drainage should be provided for the sand play areas. Wiring and light posts should be installed.



Step Four: Foundations, Footings and Paving

Allow at least one day to pour foundations and footings, to set posts and to pave hard-surfaced areas. Install sand box edging. Allow about a week for concrete to cure.

NOTE: During Steps Three and Four, you may wish to erect temporary fences to prevent curious children from wandering over to explore the potentially hazardous site.

Step Five: Play Equipment and Site Furniture

Install supporting members for play structures, fences and furniture, then assemble or build components. Sand, paint, and make final adjustments to play equipment. Haul and spread sand. Dispose of

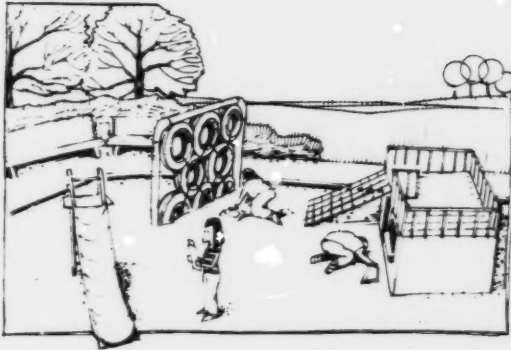
construction debris and clean the site.



Step Six: Landscaping

After heavy construction has been completed, one work party can take care of finishing touches such as painting and adding small components. Another team can undertake the landscaping. Set aside at least one day to plant trees and shrubs, to seed lawns, lay sod or repair existing turf. Allow more time if plans call for more the comprehensive landscaping challenges of creating mounds or pools. Newly seeded or sodded areas need to be fenced for protection until grass is established.





Step Seven: Inspection!

Before children are allowed into the play space, perform a thorough inspection. Make sure items are installed according to specifications for clearances and space requirements stated in the layout plan. Check equipment against manufacturers' information to be sure instructions were accurately followed. Double-check measurements, ground clearance, slope, access, guardrails, etc. Test equipment for stability, proper lubrication, proper functioning of moving parts. Be sure applied finishes are intact. Watch for sharp edges, protruding hazards, and other defects which might cause injury or lead to rapid deterioration and premature failure. Also check protective surfacing for recommended coverage and depth. Check the entire play space to see that all construction materials and debris have been removed, and that all components and facilities have been built according to the plan. These include access, fencing, seating, shelter and any special elements of your play space plan. Only after your inspection is complete and any problems fixed is your play space "open for business"!

ALL TOGETHER NOW: ORGANIZING YOUR "CREW"



If you are fortunate enough to have someone in your group with experience as a foreman, this is the time to make good use of that experience! Coordinating volunteers, no matter how eager they are, takes good organizational skills and diplomacy.

Start by selecting a leader to lead an arrangements committee. This committee will coordinate work crews, schedule work and arrange for materials, equipment and food to be delivered. When the play space is complete, they should send out notes of appreciation to each volunteer.

Because most volunteers will be able to donate only a weekend or two of their time, be sure their work is planned well in advance. To encourage participation, you might wish to provide "incentives" such as picnic lunches and refreshments. Some groups even organize a full "work bee" complete with an outdoor barbecue and dance at the end of the day! Be sure to

include the children in the activities. All age groups can contribute when properly supervised. Those who participate in building the play space will be far less likely to misuse or vandalize it.

Volunteer frustration can be prevented by ensuring that all necessary materials, tools and equipment are on site before the work crews arrive. You can also streamline the construction process by assigning assistant "foremen" to lead each of the crews. One person should be appointed to run errands, pick up extra items needed at the last minute such as extra lumber or hardware. This person should have a pickup truck, and a cash or credit card arrangement should be made in advance.

While the number and size of your crews will vary according to the scope of your play space, you may wish to assign volunteers to five areas of responsibility. As long as work areas are assigned to prevent conflicts, all four crews can be at work at the same time. If one crew finishes early, it can put in double-duty in another area, or pitch in to help another team.

1. The "Heavy Duty" Crew

Members will operate heavy equipment and trucks. This crew will excavate where necessary, dig holes, haul dirt, fill and sand, shape mounds, grade the site, install drainage and paving. These activities may be handled by contractors, or with advance arrangements, by municipal crews.

2. The Cutting Crew

Members will need a flat-surfaced area on which to set up workbenches, power sources, tools - and, of course, they'll need clear

and concise plans. The crew foreman should instruct members on the safe and correct use of all tools.

3. The Assembly Crew

Members will need an area in which to pre-assemble some components, tools, a power source, and equipment with which to move and assemble heavier pieces. Clear assembly instructions are a must.

4. The Finishing Touch Crew

Paint and stain, brushes and sanders should all be in place for the sanding and painting crew.

5. The Planting Crew

Lighter landscaping can be handled by community volunteers. Again, all tools and materials for laying sod or seeding grass, planting hedges and pruning trees should be ready and waiting on the scheduled day. A convenient water supply must be available for watering new-planted areas and hosing down surfaces as part of the clean-up process. Be sure to arrange for volunteers, school or municipal personnel to maintain the landscaped area. Careful maintenance is critical for survival, especially during the growing season.

CONSTRUCTION TIMETABLE

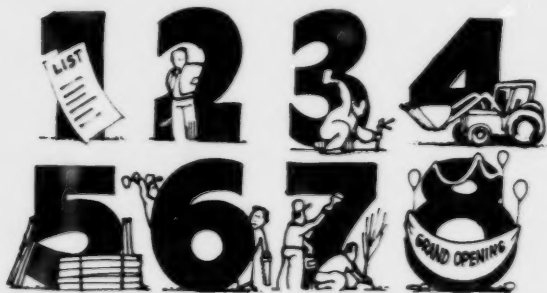
Most of your volunteer workers will be willing and able to contribute only a day or a weekend. Be sure to structure the schedule to prevent on-site delays. It may

also be wise to appoint alternate crews for each of the tasks, in case several people are unable to attend.

Always order your materials in advance, and always order everything at once. Volume orders are often rewarded with discounts - ordering all supplies at one time prevents confusion.

You may want to solicit discounts or donations of materials from suppliers. There are many ways to reward donors with "good community credit". You can arrange for an article to appear in the local paper, put up plaques at the play space, send certificates or letters of thanks, and invite donors to "grand openings" at which they're honored and thanked.

While every construction calendar is unique to the play space design and the resources of the community, the following "checklist" outlines the major steps and the approximate length of time involved.



Week 1: Working from the detailed plan, draw up an itemized "shopping list" of materials, then obtain written quotations.

Week 2: Review costs, formalize what will be undertaken by volunteers, what will be contracted, and what may be postponed for future sessions.

Week 3: Stake the site, call for buried cable location, book the heavy equipment/contractor.

Week 4: Major earthwork - excavation, grading, drainage, foundations, pilings, footings and paving.

Week 5: Delivery of materials/confirmation of crews/organization of tools, etc.

Week 6: Volunteer Weekend One - Cutting/Assembly of major pieces of play equipment.

Week 7 or 8: Volunteer Weekend Two - Cutting/Assembly of remaining play equipment and site furniture, finishing touches and landscaping - the neighborhood celebration.

Getting Feedback: The neighborhood celebration is the perfect opportunity for you to exchange ideas for future improvements with volunteers and organizers. You can also encourage participation in future work parties, and in on-going maintenance. A playspace is never 100% finished!

LOOKING DOWN THE ROAD

We've left two important considerations until last, but hope you'll consider them now, before you begin. Both underline the fact that developing a playground is an on-going process - and an on-going responsibility.

The first consideration is to maintain careful records of your play space plan and construction details. In the years ahead, your

group or the 'next' neighborhood committee will be grateful to have access to receipts from manufacturers, warranties, operating and maintenance manuals, names of contractors and other documentation!

Even your volunteer and donations lists will prove to be valuable for groups who plan to undertake the work you've left for subsequent phases.

The second is the topic of maintaining your equipment in good working condition, and maintaining the play space itself! If you don't already have a copy of PLAY SPACE MAINTENANCE, the third manual in the "Focus Series", you can obtain one at our Regional Recreation office, or from Alberta Recreation and Parks.

RESOURCE CHECKLIST

Equipment Manufacturers - will sell equipment and install it, or will sell packages for assembly. Most will also custom-design, build and install equipment, or assist your group in designing and building equipment.

Private Consultants - will provide designs, technical drawings, construction supervision and installation.

Local Parks and Recreation Departments and Boards - will provide your group with information, advice and assistance, and may work as your "partner" in building and/or maintaining the play space.

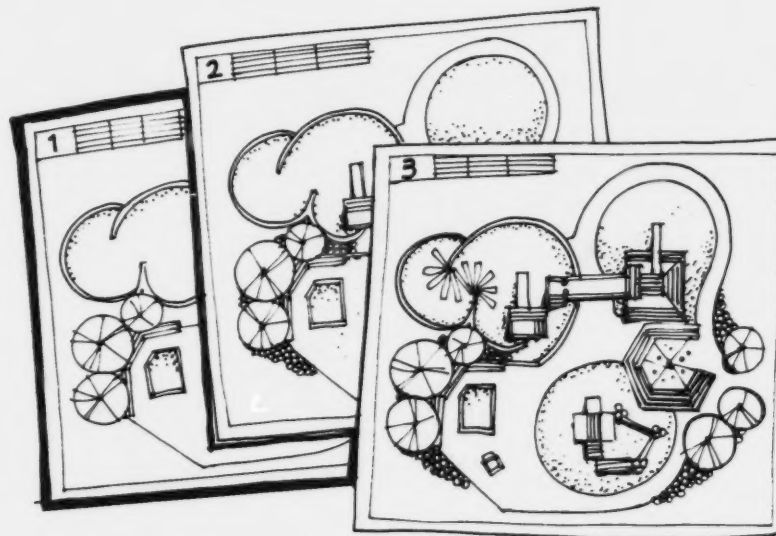
School Departments - principals, planners and maintenance foremen may be willing to provide guidance and assistance, especially if the play space is located close to the school grounds.

Alberta Recreation and Parks - representatives are available for consultation, will provide information and referrals. Information is also available on the Community Recreation/Cultural Grant Program.

SAMPLE CONSTRUCTION COST ESTIMATE FORM

While your play space is unique and won't necessarily include all elements listed here (it may feature additional components), this tear-out cost estimate form provides a good starting point. Modify it to match your plans, then copy it and use the same information to obtain written estimates from all suppliers. It's wise to obtain three estimates for each element, as these provide a solid basis for evaluation.

PHASE I



A. SITE PREPARATION

Excavate, Grade	\$ _____
Sand	\$ _____
Curbs	\$ _____
Drainage	\$ _____
Subtotal	\$ _____

B. SITE AMENITIES

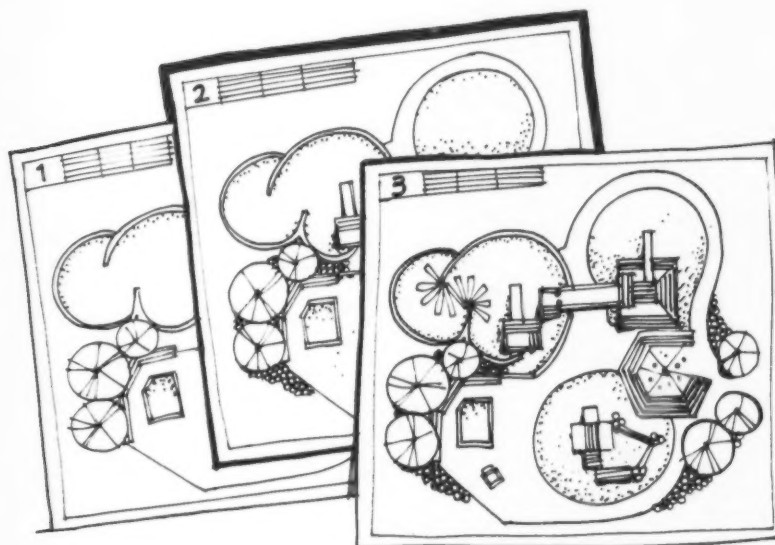
Walks	\$ _____
Lights	\$ _____
Signs	\$ _____
Benches	\$ _____
Litter Bins	\$ _____
Bicycle Rack	\$ _____
Trees	\$ _____
Seeding/Sodding	\$ _____
Subtotal	\$ _____

C. EQUIPMENT

Swings (Model _____)	\$ _____
Slide (Model _____)	\$ _____
Climbing Structure	_____
Multi-Deck	\$ _____
Tire Ladder	\$ _____
Net	\$ _____
Slide	\$ _____
Wood Ladder	\$ _____
Storefront Play House (Model _____)	\$ _____
Logs/Beams	\$ _____
Subtotal	\$ _____

PHASE I TOTAL

\$ _____



PHASE II

A. SITE PREPARATION

Excavate, Grade	\$ _____
Sand	\$ _____
Curbs	\$ _____
Drainage	\$ _____
Subtotal	\$ _____

B. SITE AMENITIES

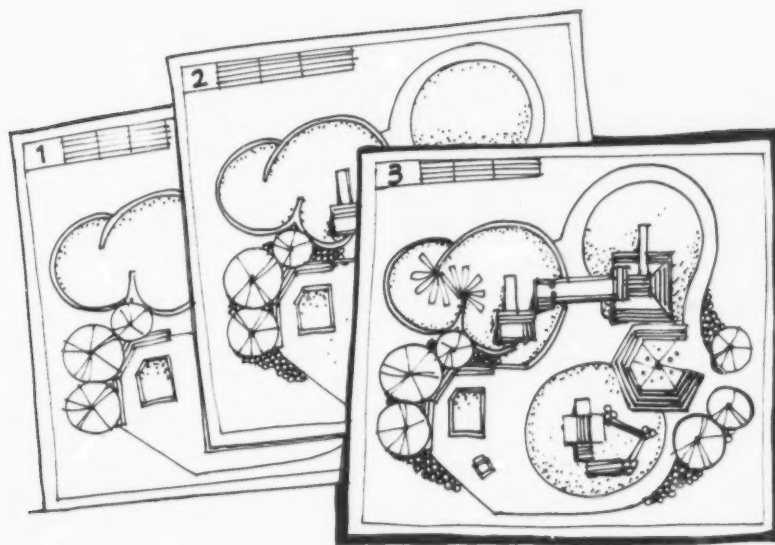
Walks	\$ _____
Benches	\$ _____
Picnic Tables	\$ _____
Litter Bins	\$ _____
Trees/Shrubs	\$ _____
Seeding/Sodding	\$ _____
Subtotal	\$ _____

C. EQUIPMENT

Spiral Slide (Model _____)	\$ _____
Vertical Tube (Model _____)	\$ _____
Tire Swing (Model _____)	\$ _____
Geodesic Dome (Model _____)	\$ _____
Beams/Logs	\$ _____
Sand Play Table	\$ _____
Subtotal	\$ _____

PHASE II TOTAL

\$ _____



PHASE III

A. SITE PREPARATION

Excavate, Grade	\$ _____
Sand	\$ _____
Curbs	\$ _____
Drainage	\$ _____
Water Line	\$ _____
Subtotal	\$ _____

B. SITE AMENITIES

Equipment Shed	\$ _____
Paved Area	\$ _____
Picnic Tables	\$ _____
Litter Bins	\$ _____
Drinking Fountain	\$ _____
Trees/Shrubs	\$ _____
Seeding/Sodding	\$ _____
Subtotal	\$ _____

C. EQUIPMENT

Deck	\$ _____
Tire Crawl	\$ _____
Climber	\$ _____
Swings (Model _____)	\$ _____
Sewer Pipes	\$ _____
Beams/Logs	\$ _____
Water Spray Post	\$ _____
Subtotal	\$ _____

PHASE III TOTAL \$ _____

OVERALL TOTAL ESTIMATED \$ _____

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